CLAIMS

1. A piezoelectric element comprising:

a substrate;

a piezoelectric layer having a first surface and a second surface opposite to the first surface, the first surface facing the substrate, the piezoelectric layer having a thickness h;

a first electrode arranged between the substrate and the first surface of the piezoelectric layer; and

a second electrode held in contact with the second surface of the piezoelectric layer;

wherein one of the first electrode and the second electrode includes a common base and a plurality of parallel branches extending from the base, the branches being spaced from each other by a pitch λ, the other of the first electrode and the second electrode including a portion that faces the branches via the piezoelectric layer,

wherein the thickness h and the pitch λ are determined to satisfy an inequality $0.005 \leqq h/\lambda \leqq 0.1$,

wherein the first electrode has a hillock occurrence rate which is no greater than 0.1%.

2. The piezoelectric element according to claim 1, wherein the common base and the branches belong to the first electrode.

3. The piezoelectric element according to claim 1, wherein the first electrode is formed of an aluminum alloy containing 0.1~3.0wt% of a metal selected from a group consisting of Ti, Cr, Ni, Cu, Zn, Pd, Ag, Hf, W, Pt and Au.

4. The piezoelectric element according to claim 3, wherein the piezoelectric layer is formed of ZnO doped with Mn.

5. A touch screen comprising:

a substrate including a detection region and a marginal region surrounding the detection region;

a wave generator arranged in the marginal region for generating a surface acoustic wave in the substrate; and

a wave receiver arranged in the marginal region for receiving the surface acoustic wave;

each of the wave generator and the wave receiver comprising:

a piezoelectric layer having a first surface facing the substrate and a second surface opposite to the first surface, the piezoelectric layer having a thickness h;

a first electrode arranged between the substrate and the first surface of the piezoelectric layer; and

a second electrode held in contact with the second surface of the piezoelectric layer;

wherein one of the first electrode and the second electrode includes a common base and a plurality of parallel branches extending from the base, the branches being spaced from each other by a pitch λ, the other of the first

electrode and the second electrode including a portion that faces the branches via the piezoelectric layer,

wherein the thickness h and the pitch λ are determined to satisfy an inequality $0.005 \leqq h/\lambda \leqq 0.1$,

wherein the first electrode has a hillock occurrence rate which is no greater than 0.1%.

6. The touch screen according to claim 5, wherein the common base and the branches belong to the first electrode.

7. The touch screen according to claim 5, wherein the first electrode is formed of an aluminum alloy containing 0.1~3.0wt% of a metal selected from a group consisting of Ti, Cr, Ni, Cu, Zn, Pd, Ag, Hf, W, Pt and Au.

8. The touch screen according to claim 7, wherein the piezoelectric layer is formed of ZnO doped with Mn.